

# Antibiotic Inhibition of Bacterial Cell Surface Assembly and Function

## Editors

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*Antibiotic Inhibition of Bacterial Cell Surface Assembly and Function* provides a comprehensive, up-to-date description of the latest advances in research into microbial growth and how antimicrobial agents interfere with this process. Contents cover the gamut from basic studies of cell wall structure, function, assembly, and degradation to how "cell wall antibiotics" (especially  $\beta$ -lactams) inhibit or modify cellular processes. Special emphasis is given to the mechanisms of resistance and tolerance of microbes to antibiotics and possible strategies for overcoming these barriers. The impact of new methodologies, especially molecular biology, on this field is richly reflected.

An essential resource for any researcher or teacher needing the most current information on microbial growth and antimicrobial agents. Based on an ASM conference held in Philadelphia, Pa., May 1987.

## Contents

- |  |  |
|--|--|
| I. <b>Structure and Function</b> (3 chapters)                  | VI. <b>Outer Membrane Permeability</b> (4 chapters)          |
| II. <b>Models of Cell Growth</b> (7 chapters)                  | VII. <b><math>\beta</math>-Lactamases</b> (5 chapters)       |
| III. <b>Wall Structure and Biosynthesis</b> (5 chapters)       | VIII. <b>Non-<math>\beta</math>-Lactams</b> (11 chapters)    |
| IV. <b>Autolysis and Peptidoglycan Hydrolases</b> (8 chapters) | IX. <b>Resistance</b> (4 chapters)                           |
| V. <b>Penicillin-Binding Proteins</b> (19 chapters)            | X. <b>The Bacterial Surface—Where Does It Begin and End?</b> |

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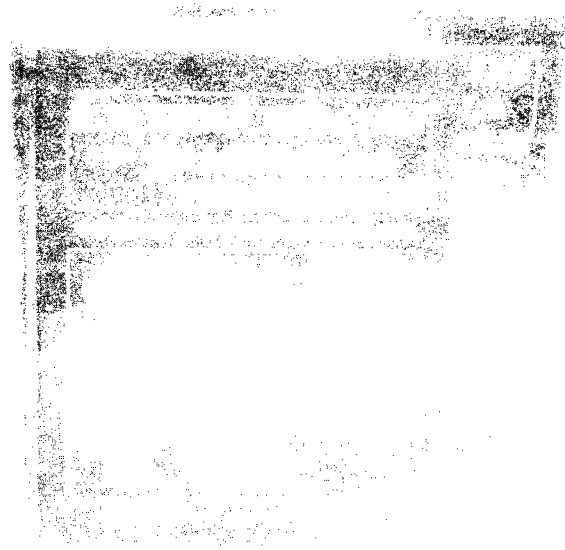
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# Phosphate Metabolism and Cellular Regulation in Microorganisms

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**Simon Silver**, *University of Illinois College of Medicine, Chicago, Ill.;*

**Andrew Wright**, *Tufts University Medical School, Boston, Mass.;*

**and Ezra Yagil**, *Tel Aviv University, Tel Aviv, Israel*

This important new volume presents the latest progress on DNA sequencing and analysis of phosphate transport systems, the Pho regulon and other regulons governing "global metabolism" in the cell, polyphosphates and their synthesis and degradation, and the export of proteins across the cell membrane. *Phosphate Metabolism and Cellular Regulation in Microorganisms* will be of interest to anyone investigating bacterial metabolism and molecular biology; it will also be of general interest to those with environmental concerns and interests in phosphate metabolism in higher organisms, both plants and animals. The work contains the proceedings of an international symposium held in Concarneau, France, June 1986.

## CONDENSED CONTENTS

### I. Phosphate Regulation in *Escherichia coli* (5 chapters)

Pho regulon, alkaline phosphatase gene regulation/phosphate response, phosphate regulon regulatory genes, PhoE protein expression, acid phosphatase regulatory characteristics

### II. Phosphate Regulation in Diverse Organisms (4 chapters)

*Bacillus licheniformis* alkaline phosphatase: proteins and genes; *Saccharomyces cerevisiae* phosphatase synthesis regulation, phosphatase multigene family, and acid phosphatase synthesis

### III. Protein Secretion and Use of Alkaline Phosphatase (7 chapters)

*E. coli*: phosphate-binding-protein synthesis/export machinery, phospholipids in protein secretion/energetics, foreign-protein secretion into periplasm, *lamB* protein export; alkaline phosphatase: protein secretion analysis, enzymatic activity and cellular location, membrane protein insertion into cytoplasmic membrane

### IV. Structure and Function of Alkaline Phosphatase (4 chapters)

Site-directed mutagenesis, crystal structure, multinuclear NMR analytical approaches, *E. coli* isozyme formation/molecular mechanism

### V. Transport of Phosphate and Phosphorylated Compounds in *Escherichia coli* (7 chapters)

Pst system: molecular, genetic, biochemical analyses; Pit system;

PhoE protein structure/function; glycerol 3-phosphate transport: *glpT*-, *ugp*-, and *uhp*-dependent systems

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*Pseudomonas aeruginosa* outer membrane protein P phosphate-binding site, sugar phosphate transport/anion exchange, solute/ion transport, *S. cerevisiae* phosphate uptake

### VII. Phosphate Reserves and Energy Storage: Polyphosphates (5 chapters)

*E. coli* accumulation/metabolism, *Acinetobacter lwoffii* surface pool, *Propionibacterium shermanii* polyphosphate kinase and glucokinase, biosynthesis and transport in yeasts

### VIII. Phosphate Reserves and Energy Storage: Pyrophosphates (4 chapters)

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### IX. Global Regulatory Systems in Enteric Bacteria (6 chapters)

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# STREPTOCOCCAL GENETICS

Edited by

**JOSEPH J. FERRETTI**

*University of Oklahoma Health Science Center  
Oklahoma City, Okla.*

**ROY CURTISS III**

*Washington University  
St. Louis, Mo.*

*Streptococcal Genetics* presents a compilation of the most recent work in this important area, featuring over sixty contributions from the leading workers in the field. There has been a dramatic increase in interest and activity on this subject over the past few years, as investigators from all disciplines have embraced the new approaches and tools that genetic studies afford.

Initially, streptococcal genetics research centered on the study of gene transfer, antibiotic resistance, and plasmid biology. However, in recent years there has been an emphasis on genetic aspects of streptococcal virulence, pathogenicity, and metabolism. These studies are directed towards the major health problems associated with strep-

tococcal diseases, namely, rheumatic heart disease, glomerulonephritis, dental caries, neonatal meningitis and septicemia, pneumonia, and skin and throat infections. Additionally, basic studies aimed at the elucidation of streptococcal fermentation pathways are of prime importance for food processing and dairy industries.

This volume is divided into five major sections, each with an introduction presenting an overview and historical perspective for each of the topics. Useful appendixes give information on streptococcal cloning vectors, nucleotide sequences, and amino acids. An attractive volume for both new and established investigators. Based on the Second ASM Conference on Streptococcal Genetics, May 1986.

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*Streptococcus* sex pheromones, plasmid-related conjugation, transposons and mutagenesis, cloning systems, restriction systems, genetic transformation.

### II. Antibiotic Resistance (10 chapters)

Resistance determinants, genes and products, conjugative transposons, natural genetic-information transfer, plasmid-borne resistance genes and products.

### III. Pathogenic Streptococci (23 chapters)

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### IV. Oral Streptococci (7 chapters)

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### V. Lactic Acid Streptococci (8 chapters)

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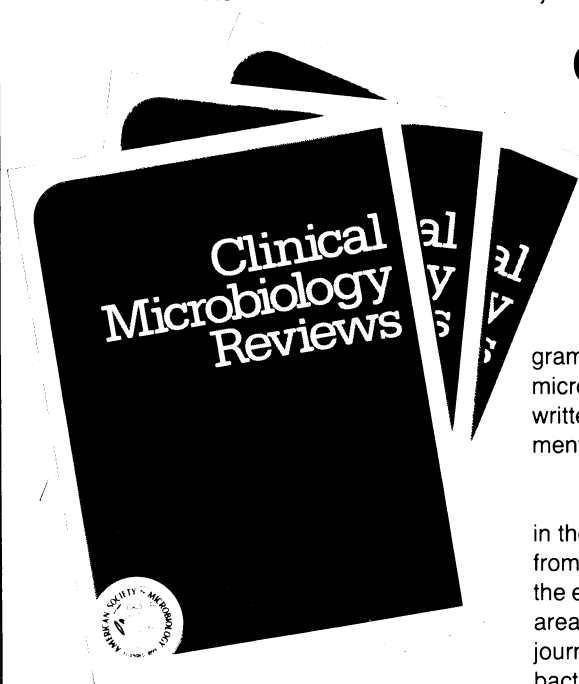
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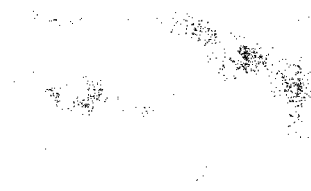
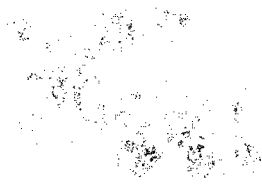
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**James A. Roth**

Iowa State University, Ames, Iowa

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#### III. Bacterial Resistance to Cellular Defense Mechanisms

(4 chapters by Czuprynski, Storz et al., Goren and Mor, and Collins and Hepper)

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